

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

Ag 84 Pro #874

THE SWEETPOTATO WEEVIL

LIBRARY

RECEIVED

NOV 12 1968

U. S. DEPARTMENT OF AGRICULTURE
BELTSVILLE BRANCH



THE SWEETPOTATO WEEVIL

Prepared by

PLANT PEST CONTROL DIVISION AGRICULTURAL RESEARCH SERVICE

The sweetpotato weevil,¹ a serious pest of sweetpotatoes, infests parts of seven Southern States—South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas.

Federal and State governments combat the weevil by finding infestations at an early stage of development, by maintaining quarantines to prevent spread of the weevil to uninfested areas, and by carrying out areawide control programs.

You can help prevent or reduce weevil damage by detecting infestations, by following recommended cultural and cleanup practices, and by using insecticides.

DEVELOPMENT

The weevil can live and multiply in sweetpotato fields, in stored sweetpotatoes, and in certain fleshy-rooted morning-glories that grow wild along the South Atlantic and Gulf coasts.

It has four stages in its development—egg, larva (grub), pupa (resting stage), and adult.

A generation is produced in 4 to 6 weeks in warm weather. In cool

weather the weevil develops more slowly. Generations succeed one another as long as the weevil has food. In areas along the South Atlantic and Gulf coasts six to eight generations may be produced in 1 year.

Egg

The female adult lays eggs in small shallow holes that she punctures in mature parts of the sweetpotato vine, in the plant stem near the soil, in the roots if she can reach them, or in stored sweetpotatoes.

Eggs are white and so small they cannot be easily seen. They hatch into larvae in about 1 week in warm weather.

Larva

The larva grows to about $\frac{3}{8}$ inch long. It is white at first, later becomes cream colored. Its head is pale brown.

As the larva feeds it burrows into the stem or root, making a tunnel that becomes larger as the larva grows.

In 2 or 3 weeks (or longer at cool temperatures) the larva transforms into a pupa.

¹ *Cylas formicarius elegantulus*.

Pupa

The pupa is slightly smaller than the mature larva. Its partly developed snout, legs, and wings can be plainly seen, and it has conspicuous eyes. Legs and wings lie folded against or around the body.

In a week (or longer at cool temperatures) the pupa turns into an adult weevil.

Adult

The adult emerges through a hole about the size of a match stem. It feeds on vines, stems, and roots.

The adult resembles a large ant. It is about $\frac{1}{4}$ inch long. Head and wing covers are shiny blue-black. The middle part of the body and the legs are bright orange-red.

Adults may live as long as 8 months. They become inactive at low temperature, then active again when the temperature rises.

Adults have been known to fly over a mile in search of food. They probably can fly longer distances. They are seldom seen in flight, however, as long as food is plentiful.

DAMAGE

Most sweetpotato weevil damage is caused by the larvae as they feed on the sweetpotato roots.

Even a lightly infested sweetpotato is unfit to be eaten by humans—both because of the presence of the larvae and because of a bitter flavor that develops. In a severe infestation, hundreds of larvae may feed on one sweetpotato.

The feeding of larvae and adults on aboveground parts of the plant apparently does not damage the plant enough to reduce yield.

The most damaging infestations occur in areas where winters are not cold enough to destroy all vegetation on which the weevil feeds. In

these areas the weevil can breed throughout the year.

Heavy infestations occur every year in areas near the South Atlantic and Gulf coasts. In Florida, the weevil has nearly eliminated commercial sweetpotato production. Without an effective State-Federal control program, damage in commercial producing areas would greatly exceed that now being experienced.

DETECTING THE WEEVILS

You can detect weevil infestation without cutting into sweetpotato plants and without slicing the sweetpotatoes.

The punctures made by egg-laying females and the feeding punctures made by adults of both sexes are a sign of infestation. They are usually in clusters. To see what they look like, refer to the illustration on page 5, in which the punctures are designated by *f*.

Young larvae in a sweetpotato begin their tunneling in the punctured area, just beneath the skin. If you cut a punctured sweetpotato, you will find that the tunnels become larger as they extend inward. Each tunnel contains a larva or pupa unless the insect has completed its cycle in the sweetpotato and has emerged. Exit holes, another sign of infestation, are designated by *e* in the illustration on page 5.

The main stems of weevil-infested sweetpotato plants become enlarged and pale. If you split stems that have this appearance, you probably will find larvae or pupae (or both), tunnels, and excrement.

WHAT YOU CAN DO

To prevent or reduce weevil infestation follow the procedures outlined below.

Seed

Plant weevil-free seed. If possible, obtain seed from an uninfested area. If you cannot do this, examine carefully each sweetpotato chosen for seed; reject any that are weevil infested.

Plant Bed

Maintain a visible covering of insecticide dust on the plant beds from the time the stems of the first plants begin to show color until the beds have been destroyed.

Use 2-percent dieldrin dust (nongranular). Apply with an ordinary garden-type rotary duster, a bellows-type duster, or any other equipment that will distribute the dust and leave it in the proper position.

Make two or more applications as follows:

First application: When first plants begin to show color, apply dust on and around base of all plants that are up.

Second application: When all plants are up, apply dust to cover the soil next to all plants.

Other applications: After all plants are pulled, apply dust if it is needed to keep the soil covered. If plants are allowed to run to produce vine cuttings, dust at the time vines drop to the ground and start to run.

Planting in the Field

Plant sweetpotatoes in fields where sweetpotatoes have not been grown the season before. In preparing the soil, give the roots enough loose soil in which to develop; they should not become exposed above ground. If possible, use sweetpotato varieties that tend to develop deep beneath the surface. Plant cuttings instead of rooted plants whenever this is practicable.

After Planting

Apply 2-percent dieldrin dust (nongranular) to sweetpotatoes in the field. Make one heavy application to sweetpotatoes of deep-rooted varieties such as Porto Rico. Make two lighter applications to those of shallow-rooted varieties such as Goldrush.

For deep-rooted varieties, apply the insecticide when the largest roots are $\frac{1}{2}$ to 1 inch in diameter. Use 75 pounds of dust per acre.

For shallow-rooted varieties, apply dust as soon as the roots start to enlarge, then apply again 2 weeks later (or about the time the soil starts cracking because of root growth). Apply 40 pounds of dust per acre the first time and 35 pounds of dust per acre the second time.

Apply the dust along the row in a strip 6 to 8 inches wide. Direct the dust to the surface of the soil under the foliage at the base of the plants.

Do not apply dieldrin within 21 days before harvest.

Harvest

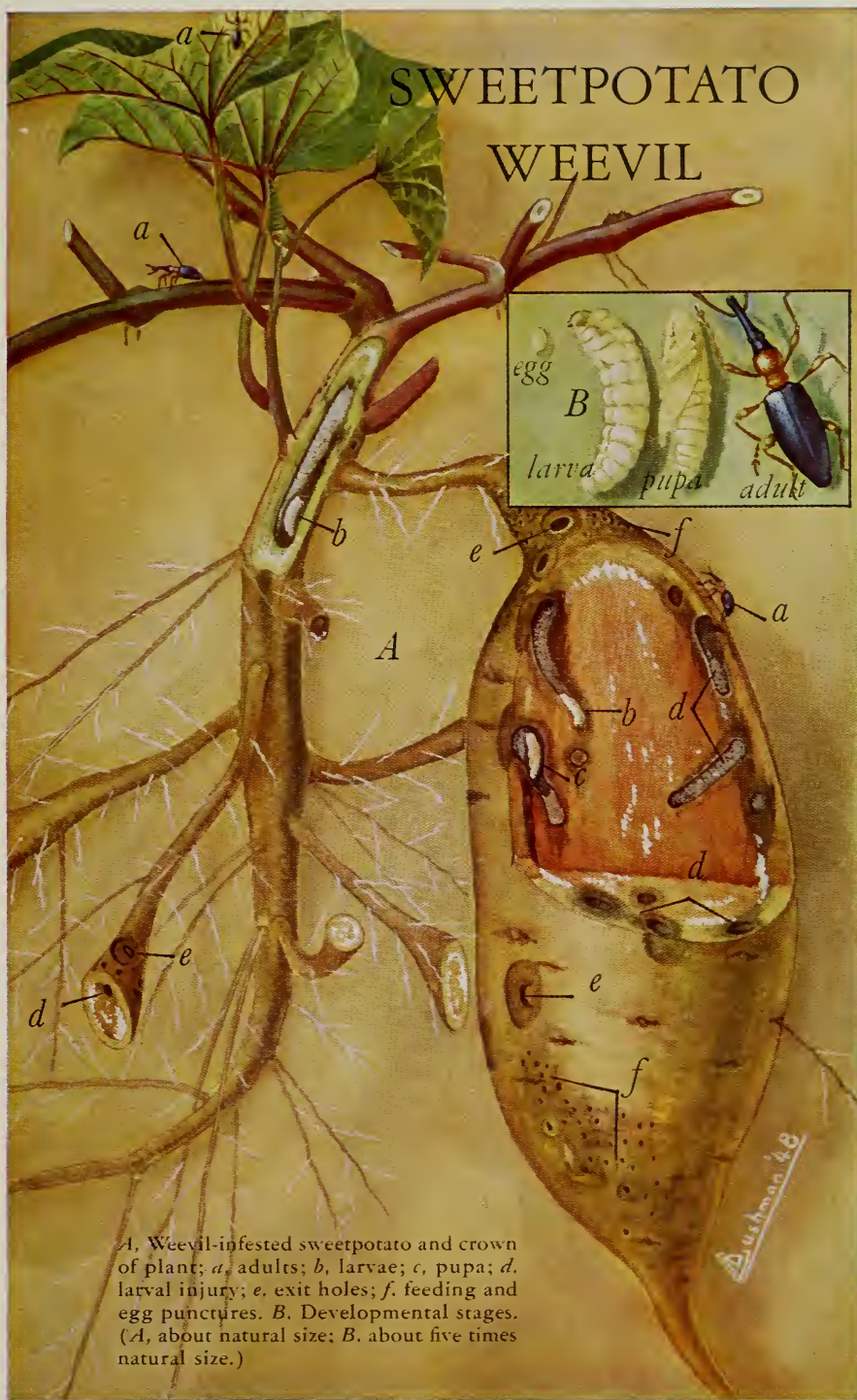
Examine each sweetpotato as you dig it. Feed all those that are weevil infested to livestock, or destroy them immediately.

After Harvest

Immediately after harvest, collect and destroy all crop residue—stems, roots, and cull sweetpotatoes. Some of the uninfested residue may be saved to use as bait for adult beetles. *Vines treated with dieldrin should not be fed to dairy animals or animals being finished for slaughter.*

Place the bait material at intervals around the edges of the field, then apply dieldrin dust to the ground in a circle surrounding the bait. Do not apply dust to the bait. In about 30 days collect and destroy the bait.

SWEETPOTATO WEEVIL



A, Weevil-infested sweetpotato and crown of plant; *a*, adults; *b*, larvae; *c*, pupa; *d*, larval injury; *e*, exit holes; *f*, feeding and egg punctures. B. Developmental stages. (A, about natural size; B. about five times natural size.)

Plow the field once or twice during the winter. Collect and destroy all sweetpotato scrap material that you unearth.

Destroy any volunteer sweetpotato plants as soon as they appear. If a new crop in the field makes this undesirable, apply dieldrin dust to the soil around the stems of the volunteer plants.

Storage

To protect against sweetpotato weevil damage in storage, apply DDT to storage place and to the sweetpotatoes. DDT will kill the newly developed adults before they can lay eggs. It will not, however, kill larvae already inside the sweetpotatoes.

Storage Place.—Empty, clean, and treat all storage places in the spring at least a month before the new crop is planted in the field.

Treat storage places thoroughly with DDT dust or spray. Apply 1 pound of 10-percent DDT dust for each 1,600 square feet. Or apply DDT spray (made by mixing 8 pounds of 50-percent wettable powder in 100 gallons of water) at the rate of 1½ gallons per 1,000 square feet.

Seed Sweetpotatoes.—Store seed apart from other sweetpotatoes. Place seed in storage crates one layer at a time and cover each layer with 10-percent DDT dust. Use 1 pound of dust for each 6 to 8 bushels or crates of seed.

Sweetpotatoes for Food.—Just before storing, dust each bushel or crate of sweetpotatoes thoroughly with about 0.8 ounce of 10-percent DDT dust.

WHAT WE DO

Federal and State departments of agriculture cooperate in a sweetpotato weevil control program—an organized effort to prevent the

spread of the sweetpotato weevil and to eventually eradicate it. Work under the program is of three kinds: survey, quarantine, and control.

Survey

Plant pest control workers inspect sweetpotato fields, wild morning-glory plants, storage facilities, and market outlets. Surveys are conducted to find new areas of infestation, to determine the limits of known infestations, and to evaluate the effectiveness of eradication and control efforts.

Quarantine

States infested with the sweetpotato weevil have enacted quarantines to prevent the spread of this pest through the movement of sweetpotato and morning-glory (*Ipomoea*) plants, including tubers, vines, cuttings, draws, and roots. The U.S. Department of Agriculture cooperates with infested and noninfested sweetpotato-producing States in enforcing these quarantines.

The intrastate or interstate movement of any quarantine article from an infested to a noninfested area is illegal unless accompanied by a sweetpotato weevil quarantine inspection certificate or permit. Persons seeking to obtain certificates or further information about quarantines should contact a State or Federal plant pest control inspector or a county agricultural agent.

Control

Most of the States infested with the sweetpotato weevil are engaged in programs to control it.

As a part of these programs, nonplanting zones ½ to 1 mile wide are established around newly discovered infestations. All material on which

the weevil feeds is removed from these zones in an effort to starve the weevil. Dieldrin is used to kill weevils in this zone before the materials on which they feed are removed.

PRECAUTIONS

Insecticides used improperly can be injurious to man and animals. Use them only when needed and handle them with care. Follow the directions and heed all precautions on the labels.

Keep insecticides in closed, well-labeled containers in a dry place. Store them where they will not contaminate food or feed, and where children and animals cannot reach them. Promptly dispose of empty insecticide containers; do not use for any other purpose.

When handling an insecticide, wear clean, dry clothing.

Avoid repeated or prolonged contact of insecticide with your skin.

After handling an insecticide, do not eat, drink, or smoke until you have washed your hands and face. Wash any exposed skin immediately after applying an insecticide.

Avoid drift of insecticide to nearby wildlife habitats, bee yards, crops, or livestock. Do not apply insecticides under conditions favoring drift from the area to be treated.

Do not feed sweetpotato by-products or culls from fields treated with dieldrin, or harvested sweetpotatoes treated with DDT to dairy animals or animals being finished for slaughter.

If you apply DDT to harvested sweetpotatoes, remove the excess residue by thoroughly washing them before they are sold or eaten.

Many insecticides are highly toxic to fish and aquatic animals. Keep insecticides out of all water sources such as ponds, streams, and wells. Do not clean spraying equipment or dump excess spray material near such water.

Have empty insecticide containers buried at a sanitary land-fill dump, or crush and bury them at least 18 inches deep in a level isolated place where they will not contaminate water supplies. If you have trash-collection service, thoroughly wrap small containers in several layers of newspaper and place them in the trash can.

This publication supersedes Leaflet 431,
"The Sweetpotato Weevil: How To Control It"

For further information on the control of the sweetpotato weevil in your area, consult the State pest control official, your county agricultural agent, or a Federal or State plant pest control inspector in your area.



Washington, D.C.

Issued August 1968

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402 - Price 15 cents